poses of the said Act. And whereas the official referees have, by their report, in writing, bearing date the 7th day of March last past, certified to us that the invention denominated Dr. Arnott's ventilating valve is an improvement tending to increase the ventilation, and thereby produce a healthier atmosphere in apartments. And that it may be made so as not to counteract the enactments for security from fire. And that there is no provision in the said Act prohibiting its being built into new chimneys, and therefore cuttings for its insertion into chimneys already built may be permitted. And that the present rules in the said Act are inapplicable, and such as would hinder the adoption of the improvement denominated Dr. Arnott's ventilating valve. And that by a modification of such rules in schedule F. of the said Act such objects will be better attained. And having, on investigation of these grounds, and of the subject matter set forth by the official referees, considered them, and the opinion of the official referees to be well-founded, we, the undersigned, the said commissioners of her Majesty's works and buildings, do hereby direct that a modification be made in the rules of the said Act, after the last existing clause in schedule F., as follows, viz.:—

"And except for the insertion of Dr. Arnott's ventilating valve, provided that such cutting be not nearer than 9 inches to any timber or other combustible substance, and that the valve be so arranged as not to be capable of opening more than 30 degrees from its vertical position. And that every part of the valve be made and fixed with incombustible materials."

Which modification being made in such rules will, in our opinion, give effect to the purposes of the said recited Act.

As witness our hands this 17th day of June, 1845. (Signed)

LINCOLN, } Commissioners of
CHARLES GORE, } Works and Buildings.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT an ordinary meeting held on the 23rd ult., Mr. Tite, V.P., in the chair, several presents were received, and Mr. J. Dobson, of Newcastle-on-Tyne, was elected a fellow. A paper was read by C. Parker "On the Proportions of the Beams used by Ancient and Modern Architects." The paper commenced by shewing the strongest beam that could be cut out of a round tree, and contrasting the proportions with the usual forms which ancient and modern architects adopted in beams, the former making the breadth, and the latter the depth, the element of strength. It then traced the views that different nations have held and practised in their constructive operations. It stated that the Egyptians preferred the square form of bearing beam, which proportion was used in Solomon's palace, and that the Greeks and Romans used the rectangle placed horizontally. It then remarked that in the timber buildings erected before and after the Norman conquest, the breadth of a beam was placed to resist an opposing force, and so continued to be used in the rebuilding of London after the fire in 1666. Prior to this date, the system of double framing was introduced on the continent, and changing the proportion of timbers made the depth preferred to the breadth, which view is now thought correct. The diversity of opinions thus shewn, induced the writer to institute a number of experiments, which were made with iron, from the difficulty of obtaining specimens in wood of equal strength.

The results of these were given; one curious deduction was, that two bars of equal size will not bear double the weight that one of them will support. The same bars formed into the reversed T shape (⊥), would support twice the weight that they would carry placed side by side. Making a beam two, three, or four times the width does not make it proportionably stronger. In a conversation on the subject that afterwards occurred, Mr. Tite referred to the tables in Tredgold, and cautioned young architects against unlimited dependence on them; he believed the scantlings there given, to be too slight. The scantlings, for example, given for a queen-post roof of fifty feet span were insufficient. He had made a roof in younger days with scantlings in accordance with Tredgold's instructions, and it had failed. Much was often said of the smallness of timbers used now as compared with those in old buildings; for his part he believed our houses (that was, our properly built houses) were better timbered now than then. He regretted that Mr. Parker had not tried his experiments with timber, instead of iron, as the materials were not analogous. Mr. Godwin directed attention to the report recently made by Mr. Cubitt and Sir H. Delabeche as containing valuable information on the subject of iron beams. Mr. Panson said the great point was to discover the neutral axis in beams.

A paper drawn up by Mr. G. Bailey, was afterwards read, descriptive of a series of drawings of buildings in Southern India, made some time since under the direction of General Monteith. The drawings comprised some elaborate views of the pagodas, and the palace and choultry of Tremail-Raig at Madura, a city on the Coromandel coast, and erected about the year 1623; likewise of the Great Temple of Shivven, on the sacred island of Ramisseram, between the Coromandel coast and the island of Ceylon, and but little known to Europeans. This temple and its appurtenances almost entirely cover an area of 830 feet by 625 feet. The building is of different periods, a small shrine or temple having existed on the island from a remote period, but the chief additions were made by the Rajah of Ramnad, about 150 years since.

Mr. Moon offered some remarks on his improved chimneys. He stated that in consequence of the new Metropolitan Buildings Act, and in order to comply with its regulations, he had been compelled to new model the bricks, in doing which he had been enabled to simplify the construction. He observed that different opinions existed as to the space required for the emission of smoke, and that various sizes and diameters had been adopted. In his original formation he adopted three sizes, but experience and attention had brought him to the conclusion that one size was sufficient for ordinary purposes, viz., 10 inches diameter; which, bonded and worked in a wall two bricks thick, and complied with the stipulations of the Building Act, by leaving 4 inches of solid brick at the thinnest point.

July 7th.—Mr. Pocock in the chair. A paper was read by Mr. Edward Panson, jun., on a mosaic pavement in the cathedral of Sienna. Mr. Scoles afterwards made some remarks on columns.

THE CONSTRUCTION AND WORKING OF RAILWAYS.

SIR,—As you were kind enough to insert my former communication on railways, I beg leave to trouble you with a few more observations on the same subject. I observe that a commission is to be appointed by her Majesty, to inquire into the inconvenience attending the break of gauge, and the practicability of having a uniform gauge established throughout the country; and as the commission is to be composed of men of science unconnected with the Houses of Parliament, and, I hope, *unINTERESTED* in any line of railway, I anticipate much good will result to the country from their labours. There cannot, I am sure, be two opinions on the subject of the inconvenience attending the difference of gauges of railways, and even Mr. Brunel's proposition to obviate the same, namely removing the train of carriages from the broad to the narrow gauge, and *vice versâ*, is but a clumsy and objectionable substitute to cover an acknowledged deficiency; for if we are to reap the full benefit of railway locomotion, we should not be subject to any such delays or obstructions as would be required to transport a whole train of carriages from one line to the other at every point of junction of railways of different gauge.

In Ireland one uniform gauge might have been adopted, and even a different principle, if considered necessary, but I observe they are pursuing the same short-sighted policy as we are in England.

The evil consequences attending the difference of gauge was foretold by Mr. Hawkshaw, civil engineer, in his report to the Great Western Company in 1838, immediately after the Great Western Railway was commenced; he observed: "It will not be too much perhaps to say that three-fourths of England are already being traversed by railways of the narrow gauge. It follows then that any company deviating from this gauge will be isolating themselves to a certain extent, if not as regards their main line, yet as regards their branches; if not as regards their direct traffic, yet certainly as regards their collateral traffic. But in the present early stage of railway traffic it yet remains to be seen whether or not it may become a great evil for a main line to be thus isolated and rendered impossible of connection with the great lines in its neighbourhood. That it will be an evil in this sense as it regards the branch lines there can be little doubt, for they, or some of them, in course of time will of necessity run into the neighbourhood of other lines of different gauge; but with these, however vital the connection may be, all connection will be impossible.

In this point of view only it has become a serious matter for any company in this country to make their line differ as to dimensions from the majority of the lines around them. It is to a certain extent as if a canal company in a country of canals should construct a new navigation so, and with locks of such a character as would totally shut out the boats of all the canals that surrounded it."

Although it has been remarked by a member of a committee of the House of Commons that no engineer would commit himself to state what he considered to be the best gauge for railways, yet when we reflect that all the leading engineers of the day, with one or two exceptions, are projecting railways on the narrow gauge principle, it is pretty conclusive evidence which system they prefer. I always judge of engineers by their works. I regret that the powers of the commission are to be limited to the subject of the gauge, and not extended to the construction and working of railways, as these appear to me to require scientific analysis and investigation as well as the gauge. There is now and will be as much squabbling between engineers about this construction of railways as there was formerly between the disciples of Telford and MacAdam respecting the correct principles of construction of turnpike roads; and unless this subject, as well as the more important one of the moving power, be submitted to the mature deliberation of a scientific commission of inquiry, a further sacrifice of the "sinews" of the country must be made to the great benefit of engineers and gentlemen of the legal profession. The great cost attending the progress of private bills through Parliament has frequently proved a source of serious and permanent injury to the works.

As the extent of railway on the narrow gauge principle exceeds nearly fourfold that of the broad, and as it would be attended with a considerable expense to increase the width of the narrow gauge railways, inasmuch as the cuttings and embankments would require widening, the bridges and tunnels enlarging, and the upper works reconstructing and strengthening, and as it is not too late even now to obviate the evil of the difference of gauges, I would recommend the broad gauge to be reduced, which may be done at a comparatively trifling cost merely by laying down an additional line of rails to suit the narrow gauge traffic, and that the respective companies of the broad gauge railways could introduce gradually locomotive engine carriages, &c., on the narrow gauge principles as their old stock became depreciated or unfit for service. As this alteration would be required for the public convenience, I think in justice the expenses incurred ought to come out of the public treasury.

B. B.

Brecon, June 30th.

*** In the committee, on Wednesday, the 25th ult., Mr. Cobden moved the following resolution, which was afterwards agreed to:—"That, it having been represented to this House by petitions from various public bodies, as well as from merchants, manufacturers, and others, that serious impediments to the internal traffic of the country are likely to arise from the 'breaks' that will occur in railway communications from the want of a uniform gauge; and these representations not having been fully inquired into by any of the committees of this House upon private bills, and it being desirable that the subject should be further investigated, an humble address be presented to her Majesty, praying her Majesty to be graciously pleased to issue a commission to inquire, whether in future private Acts for the

For Info on PDF Compression and OCR go to ThePaperlessOffice.org